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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,951	03/28/2006	Jian-Ping Wu	3477-112	5581

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MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627

EXAMINER	
AUDET, MAURY A	
ART UNIT	PAPER NUMBER
1654	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,951	WU ET AL.	
	Examiner	Art Unit	
	MAURY AUDET	1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20* is/are allowed.

6)☒ Claim(s) *1-19 and 21-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

As noted previously, the present application has been transferred from former Examiner Khana to the present Examiner.

Applicant's filing of the RCE, affidavit, and arguments on 2/25/08. Applicant has thoroughly argued over 4 affidavit pages and 9 pages of response (13 pages total) why the present invention is not obvious over the art of record. Applicant's arguments have been fully considered, but are not addressed herein. As the Examiner has added 'X' art from the International Authorities opinion on the related International Application, as well as another piece or prior art to further clarify why the invention is being maintained as obvious over the combination of references. Claim 20 is maintained as allowable.

The Examiner notes that the invention remains openly claimed ("comprising" transition phrase), and simple in form:

1) simply adding a solvent to flour,

2) separating the flour,

3) then adding an enzyme to separate out an ACE-I (e.g. claim 20 tripeptide Val-Ser-Val).

The Examiner appreciates Applicant's thorough analysis of the art, but is curious how it took 13 pages of argument to distinguish the art from the present invention. The shear volume of arguments, however, have clouded though, what should otherwise be a simple sentence or two, as to what specific limitation above, sets apart the presently claimed invention, from the combination applied by the previous Examiner and maintained by this Examiner. In the

response hereto, Applicant is asked to bring the focus to a point, at the outset, as to the specific 'step(s)/limitation therein' that would not have been obvious to one of ordinary skill in the art at the time of the invention, in view of the combination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP406016568A (Chiba Seifun; cited in Applicant's International Application PCT/CA2003/002020 (WO 2004057970)) in view of Wu et al. (J. Agric. Food Chem. 49:501-506 (2002)) *in view* of Garrison et al. (US 4,174,075), Eto et al. (J. Jpn. Soc. Nutr. Food Sci (1998), 51:355-359; cited by the Applicant in the IDS filed on February 21,2006).

JP406016568A (abstract, provided below and which Applicant has full document for IA citing same reference) teach a process for preparing an ACE-I peptide containing hydrolysate, using the steps of contacting flour with an organic solvent (acetic acid) [which the previous

primary reference, Wu et al., did not], adding HCl to the solution (plausibly separating to some degree the flour from the solvent), and treating the flour with the proteolytic enzyme pepsin to produce ACE-I tripeptide-containing hydrolysates.

As discussed in the KWIC search abstract of the reference:

> The inhibitor is useful as a drug or a specific health food for the prevention and inhibition of hypertension. In an example, 6.7g of wheat gluten [FLOUR] contg. 70% moisture were dissolved in 200ml of 2N acetic acid [SOLVENT] and the soln. was adjusted to a pH of 3.5 with HCl. Pepsin [PROTEOLYTIC ENZYME]of protein wt. ratio 1.250 was added to hydrolyse it at 37 deg.C for 24 hrs. The hydrolysate was then heated at 100 deg.C for 10 mins. to inactivate pepsin and freeze dried to give 2.0g of pepsin decomposed powder. It was again dissolved in 20ml of 0.02N acetic acid and gel filtered by a Sephadex G-25 column. The peak eluted last was collected and freeze dried. 250mg of the resultant powder was gel filtered by a Sephadex G-10 column. The peak eluted last was collected and conc. in vacuo. The concentrate was subjected to a reversed phase HPLC (Cosmosil 5D18AR) and eluted by acetonitrile concn. gradient in 0.05% trifluoroacetic acid. The active fraction was again subjected to a reversed phase HPLC of acetonitrile concn. gradient elution twice to give 0.2mg tripeptide, Ile-Ile-Tyr [ACE-I INHIBITOR PEPTIDE-CONTAINING HYDROLYSATE]. The ACE inhibiting activity, IC50, of the peptide was 3.7 microns.

The only reason JP406016568A is not cited under 35 USC 102 (over e.g. claims 1, 2, 7, 8, 10-14, and 18-19 as the IA did as an 'X' reference) is that the reference was not found to 'expressly' teach the step (b) of "separating the meal or flour of "step (a) from the solvent", prior to adding the proteolytic enzyme to the flour solution.

As discussed previously on the other references:

Wu et al. disclose contacting a defatted soy meal with Alcalase to yield ACE inhibitory peptides (Abstract, Materials and Methods, page 502, Conclusion, page 505). Wu et al. does not expressly teach the sequential steps of presently claimed steps a)-b), namely adding a solvent and

removing flour, prior to adding the proteolytic enzyme (claim 1, which all later Claims directly or indirectly depend).

Garrison et al. "teach defatting of oleaginous seeds rich in lipids with extraction using water-alcohol systems at temperature ranges from room temperature to the boiling point of the solvent to provide high quality protein" (see entire document).

Eto et al. is cited for teaching that it is known in the art to obtain a hydrolysate that contains the ACE-inhibitory peptide of Phe-Leu (now cancelled from claim 20) from an enzymatic hydrolysate of whey protein, wherein the whey protein is contacted with alkaline proteases (see entire document).

It would have been obvious at the time of the invention to arrive at the sequential steps for preparing an angiotensin converting enzyme (ACE) inhibitory peptide-containing hydrolysate, *including* (if not already inherent therein) step (b) of separating the flour from the solvent prior to adding pepsin as the proteolytic enzyme, in JP406016568A, based on the advantageous teachings of JP406016568A alone, or in view of the advantageous teachings of Wu et al. directed to the same end result and as well as the optimizations provided for in Garrison et al. and Eto et al., each reference having been thoroughly discussed of record, and each constituting analogous art in the field of agricultural protein chemistry.

As to the amended claims under rejection, the previous Examiner's conclusion is maintained that it would have been obvious to one of ordinary skill in the art at the time the invention was made to make minor adjustments (e.g. types of solvents/enzymes, amounts/ranges thereof) to conventional working conditions as merely a matter of judicious selection and routine

optimization for providing a means for the expected and predicable results in JP406016568A in view of the secondary references, which the skilled artisan would have been motivated to combine based thereon and arrive at the presently claimed invention.

Claims 22-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP406016568A (Chiba Seifun; cited in Applicant's International Application PCT/CA2003/002020 (WO 2004057970)) in view of Wu et al. (J. Agric. Food Chem (2001) 49: 501-506), Garrison et al. (USPN 4,175,075) and Eto et al. (J. Jpn. Soc. Nutr. Food Sci (1998), 51:355-359; cited by the Applicant in the IDS filed on February 21,2006), and further in view of Tzen et al. (Plant Physiol. (1993) 101:267-276).

All references except Tzen et al. are all discussed above. The new primary reference, JP406016568A, does not expressly teach treating flax seed meal or canola seed oil meal to produce the same flour isolated ACE-I peptide-containing hydrolysate.

With respect to claims 22-30, Tzen disclose that it is known in the art that oil-containing seeds such as flax, soybean also contain proteins (oleasins) among their contents (abstract; Materials and Methods, Plant Materials; Table 1, page 271).

It would have been obvious to one of ordinary skill in the art to arrive at the same flour isolated ACE-I peptide-containing hydrolysate, in flax seed meal or canola seed oil meal, using any number of steps, but at least the enzyme treating portion, in JP406016568A, based on the advantageous teachings thereof, particularly in view of Wu et al. teaching the same end result, and that one of ordinary skill in the agricultural peptide arts, would have known that the same

process to arrive at the same end product could have been applied to the flax and canola of Tzen et al. Garrison et al. and Eto et al. provide the teachings and suggestion as to the optimization of the other aspects of the dependent claims hereto. The combination of JP406016568A in view of Wu et al., Garrison et al. and Eto et al., irrespective that Tzen et al. does not mention soy protein in said study, is maintained as the ordinary skilled artisan in protein chemist in agricultural protein chemistry is familiar with the properties and teachings within the field and the applicability of said teachings to other like-kind proteins within said field. Along the lines the original Examiner stated, it would have been obvious to the skilled artisan in the field to modify the flour directed process of JP406016568A and combine proteinaceous flax seeds with the ACE-inhibitory peptide isolation processes described by Wu et al., based on the known and expected result of providing a means recognized in the art to recover ACE-inhibitory peptides from seeds rich in proteins.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Allowable Subject Matter

As noted before, as to claim 20, Applicant's amendments and arguments thereto, are deemed persuasive.

Although the updated search by this Examiner discloses the very close art in JP406016568A, discussed above, teaching a process of preparing ACE-I *tripeptides*-containing hydrolysate by enzymatic degradation of wheat protein (e.g. flour), page 5 of the description shows 23 tripeptides prepared in this fashion, but does not expressly teach the present tripeptide: Val-Ser-Val, so prepared.

Were claim 20 amended in base claim 1, the claims would likely receive favorable consideration, wherein a hydrolysate comprising only the peptide of Val-Ser-Val, and the amendment of claim 1, to which claim 20 depends, to the sequential method steps of:

1. (Currently Amended) A process for preparing an angiotensin converting enzyme (ACE)inhibitory peptide-containing hydrolysate comprising:
a_) contacting a substantially oil-free seed meal or flour with an organic solvent,
b_)_separating the meal or flour of step (a) from the solvent, and
c_)..treating the separated meal or flour of step (b) with at least one proteolytic enzyme to produce an ACE inhibitory peptide Val-Ser-Val -containing hydrolysate.

Thus, claim 20 is not reasonably taught or suggested, based on the prior art of record.

Conclusion

Claim 20 is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAURY AUDET whose telephone number is (571)272-0960. The examiner can normally be reached on M-Th. 7AM-5:30PM (10 Hrs.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MA, 3/28/08

/Cecilia Tsang/
Supervisory Patent Examiner, Art Unit 1654